DATA EVALUATION REPORT

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Secondary Reviewer: Freshteh Toghrol, Ph.D. BPPD

STUDY TYPE:	Field Efficacy Studies on Mosquitoes (Subdivision M Guideline 95-9; OPPTS 810.3400)
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SUBMISSION No.:	S562105
MRID No:	447861-09
TEST MATERIALS:	RF 9805
STUDY No:	2560
SPONSOR:	Wellmark International, 12200 Denton Drive, Dallas, TX 75234
TESTING FACILITY:	John A. Mulrennan, Sr. PEHEREC, FAMU, 4000 Frankford Avenue, Panama City, FL 32405
TITLES OF REPORT:	Efficacy studies of RF9805 formulation against *Aedes taeniorhynchus* pupae in small plot field tests
AUTHOR/STUDY DIR:	Tom G. Floore, John P. Smith, and Kenneth R. Shaffer
REPORT ISSUED:	3/11/99
QUALITY ASSURANCE:	The studies submitted in MRID 447861-09 were not conducted under Good Laboratory Practice (GLP) standards. A Non-compliance statement was signed by the study director, submitter, and sponsor.

SUMMARY: One field study was conducted in FL to assess the efficacy of RF 9805 (containing 0.2% methoprene) and XR-G granules (a.i. % unknown) in the control of mosquito larvae. Application rates were 5, 8, 10, and 15 lbs of product/A for RF 9805 and 8 lbs of product/A for XR-G and XR-G alternate formulation, with five replications/rate and formulation. Test plots were not described, but each plot had laboratory-reared, *A. taeniorhynchus* third instar larvae (800-1000) were added (at an unspecified time) prior to each sampling interval. At each sampling interval, 100 pupae were recovered from each plot and placed in styrofoam cups containing water from the respective plots, and percent mortality was measured. The optimum rate of RF 9805 application was 10 lbs/A; at this rate, approximately 95 to >99% control of *A. taeniorhynchus* larvae was achieved up to 10 days posttreatment. The percentage control of mosquito larvae was also greatest for the 10 lbs/A rate at each sampling interval (2, 5, 8, and 10 days posttreatment). The XR-G alternate formulation performed somewhat better that RF 9805 (at 10 lbs/A), and the XR-G formulation achieved somewhat lower control. One additional field study should be conducted to better assess the efficacy to RF 9805 in the control of *A. taeniorhynchus* larvae.

CLASSIFICATION: Supplemental. Current guidelines (OPPTS 810.3400 *Mosquito, Black Fly, and Biting Midge (Sand Fly) Treatments*, EPA 712-C-98-410, March 1998) state that a minimum of five large-scale are generally necessary. BPB recommends that data from at least one field test be submitted to more accurately assess the efficacy of RF 9805 in the control of *Aedes taeniorhynchus* larvae.

I. INTRODUCTION

One field study was conducted in FL to assess the efficacy of RF 9805 (containing 0.2% methoprene) and XR-G granules (a.i. % unknown) in the control of mosquito larvae.

II. MATERIALS AND METHODS

RF 9805: Application rates of 5, 8, 10, and 15 lbs of product/A were applied (method unspecificd) in mid-September. Rates were randomized among the plots with four reps per application rate [the data table (Table 1, MRID 447861-09, p. 7) apparently shows five reps/rate]. Samples were collected at 2, 5, 8, and 10 days posttreatment.

XR-G: Application rates of 8 lbs of product/A were applied (method unspecified) in mid-September. Rates were randomized among the plots with four reps per application rate [as above, the data table (Table 2, MRID 447861-09, p. 8) apparently shows five reps/rate] . Samples were collected at 3, 7, 14, and 21 days posttreatment.

Plot Preparation/Sampling: Laboratory-reared, *A. taeniorhynchus* third instar larvae (800-1000) were added to each plot for each sample interval (time before treatment was unspecified). Larvae were fed a mixture of powdered liver and Brewer' yeast daily until pupation. Detailed plot descriptions were not provided. During the study, temperatures ranged between 75.4°F and 86.4°F; salinity was 13 ppt at the beginning of the experiment and 5 ppt at termination. At each sampling interval, 100 pupae were recovered from each plot and placed in styrofoam cups containing water from the respective plots. After complete emergence, corrected percent mortality was determined using the following formula:

Corrected % kill = (% alive in check - % alive in test)/(% alive in check) x 100

Registrant-summarized data were presented in Tables 1 and 2 (MRID 447861-09, pp. 7, 8), but no raw data were submitted to verify the accuracy of the calculations. NOTE: The boldfaced corrected mortality %s on Tables 1 and 2 (MRID 447861-09, pp. 7, 9; see attachments) can be calculated by subtracting the listed values from 100, and using the resulting values in the formula described above.

III. RESULTS

RF 9805: For all application rates, percentage larval mortality declined from day 2 posttreatment to day 8 posttreatment, then increased at day 10 (see Table 1 attached). The lowest percentage mortality (day 8) was associated with a rain event. Control of *A. taeniorhynchus* larvae was >95% for all rates at day 2 posttreatment, but only the 10 lb/A rate achieved >90% control at day 10 days.

XR-G Granules: The XR-G and XR-G alternate formulations achieved 90-100% control of *A. taeniorhynchus* larvae to day 7 posttreatment the declined to approximately 95% and 85%, respectively, for the XR-G alternate formulation and XR-G formulation at day 21.

IV. CONCLUSIONS

The optimum rate of RF 9805 application is 10 lbs/A; at this rate approximately 95 to >99% control of *A. taeniorhynchus* larvae was achieved up to 10 days posttreatment. The percentage control of mosquito larvae was also greatest for the 10 lbs/A rate at each

sampling interval (2, 5, 8, and 10 days posttreatment). The XR-G alternate formulation performed somewhat better that RF 9805 (at 10 lbs/A), and the XR-G formulation achieved somewhat lower control. One additional field study should be conducted to better assess the efficacy to RF 9805 in the control of *A. taeniorhynchus* larvae.

V. STUDY DEFICIENCIES

The following study deficiencies were noted by the reviewer: (i) field plots, statistical design, data analysis, and method of test substance application were not adequately described; (ii) the time interval between treatment of the field plots and addition of mosquito larva was not reported; (iii) the study author stated that only four replications were used for each application rate and formulation, but the summary data tables clearly show that five reps were used; (iv) the data presented on the summary data tables were inadequately explained; the reviewer had to back calculate the existing data to verify the mean "corrected % mortality" listed by the study author.

ATTACHMENTS

ATTACHMENT #

Study Number 2560

Table 1. Efficacy of Zoecon RF9805 mosquito control product against Aedes taeniorhynchus in small plot field tests.

Application Rate	Posttreatment days and corrected % mortality							
	2	corr % mort	5	corr % mort	8	corr % mort	10	corr % mort
Control	15.53		5.41		8.49		11.54	
	12.12		19.59		4.08		10.78	
	8.16		11.76		10.00		21.10	
	7.92		13.86		12.24		10.89	
TOTAL	10.97		12.41		8.71		13.70	
5 lbs/acre	92.08		71.30		27.72		79.05	
	98.98		100.00		84.62		97.09	
	94.85		67.33		37.61		50.86	
	97.92		90.10		18.18		23.58	
TOTAL	96.92	**95.41**	81.91	**79.35**	39.49	**33.72**	62.09	**56.07**
10 lbs/acre	99.02		98.15		64.23		99.01	
	100.00		100.00		91.43		98.06	
	100.00		100.00		87.88		100.00	
	100.00		88.89		64.36		85.71	
TOTAL	99.77	**99.74**	96.90	**96.46**	76.40	**74.15**	95.68	**94.99**
15 lbs/acre	99.07		99.07		45.45		79.21	
	100.00		99.01		71.43		97.09	
	94.00		96.04		86.27		77.67	
	100.00		94.17		76.64		43.56	
TOTAL	98.27	**98.06**	97.09	**96.68**	70.20	**67.36**	74.51	**70.46**

ATTACHMENT #2

Study Number 2560

Table 2. Efficacy of Zoecon XR-G mosquito control product against Aedes taeniorhynchus in small plot field tests.

Application Rate	Posttreatment days and corrected % mortality							
	3	corr % mort	7	corr % mort	14	corr % mort	21	corr % mort
XR-G Alt	100.00		100.00		93.14		88.00	
	100.00		100.00		99.00		99.00	
	100.00		100.00		96.08		98.02	
	100.00		100.00		97.00		98.99	
TOTAL	100.00	100.00	100.00	100.00	96.29	95.94	96.60	95.37
XR-G	100.00		98.02		95.92		78.22	
	98.84		100.00		98.99		79.00	
	100.00		80.20		30.11		94.95	
	100.00		90.00		82.24		96.04	
TOTAL	99.75	99.72	92.04	90.91	77.58	75.44	87.00	84.97